APPENDIX L

Description of Site Filling Activities

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Site History Report – October 2004
Former Ingersoll Rand Company Facility
Phillipsburg, New Jersey

L.1 Locations and Purposes of Non-Indigenous Fill

Filling activities on the site apparently began shortly after the initial facility construction and the beginning of active foundry operations around 1905. Initial filling activities onsite utilizing non-indigenous fill containing spent foundry sand appears to have been primarily conducted to raise topographic grade and flatten areas of the site for building, road, and railroad track construction. Based on interpretation of early aerial photography and other site photographs, the first areas believed to have been filled are located in the Foundry area, at the Cameron facility, and at the south ends of Buildings #9 and #10; all of which were likely filled near or prior to 1920. After the 1920's additional filling activity was conducted in the areas of Buildings #3, #33, and #106 to facilitate growth of the foundry operations at the site, in the area of Building #11 to facilitate growth of the Compressor Division, and in areas south and east of the Compressor Division. After major facility expansions ended, most of the facility's foundry waste material, as well as construction debris and other facility wastes, were deposited at an area southeast of main buildings – later identified as the Old Landfill (AOC-29).

Non-indigenous fill materials are also found throughout these areas and the facility courtyard between Buildings #7, #8, #12, #13, #16, and #19, where spent foundry sand or other non-indigenous fill materials were used or were mixed in with native backfill materials when excavations were conducted. Known locations of fill are depicted in Figure 3 of the Site History Report.

L.2 Old Landfill (AOC-29)

The old landfill is located to the southeast of the facility's manufacturing buildings area. The landfill area was originally a naturally-occurring low area with a general slope and drainage to the southeast. The landfill now creates a flat terrace approximately 25 acres in size extending southeast from the manufacturing buildings. The thickness of the landfill is approximately 10 feet or less to the north of Loop Road, and thickens up to 40 feet at the edge of the terrace (Tellus, 1994).

The old landfill was the only location for disposal of plant waste materials for approximately 60 years. The old landfill received foundry waste and other facility waste products from the time of the facility construction in the early 1900s until the cessation of landfilling activities in the late-1970s.

Spent foundry sand, which represents approximately 75% of the waste material placed in the old landfill, was transported to the landfill by the on-site railroad system and was unloaded with a mobile crane and bucket. The materials were not compacted as the area was filled. Other plant waste

materials, including construction debris, were disposed in the landfill on a regular basis. Foundry sand was used as cover. Wood and other combustible materials were burned in onsite incinerators to reduce their volume prior to placement in the landfill.

After 1974, most of the facility's solid waste material was disposed off-site. After 1977, spent foundry sand was also disposed off site. Construction debris (dirt and concrete), bulky materials (wood patterns and rotor racks), and dust from the plant's dust collectors continued to be disposed on-site until 1981.

A hydrogeologic investigation based on a work plan approved by the NJDEP was conducted during the summer of 1982. As part of the 1982 investigation, soil samples were obtained from 5 test pits located across the landfill and water samples were collected from nearby monitoring wells. Test pits were dug to a depth of 14 feet. No evidence of free liquids or unusual odors was observed during the investigation. Soil analytical results indicated impacts in excess of soil cleanup criteria for metals and various BN compounds, specifically PAHs (Capsule 1984; Tellus, 1994). Subsequent remedial investigative activities conducted by ENSR and TRC have revealed consistent results with the 1982 work. Water quality analysis during initial 1983 investigative activities and reported in the *Final Report on the Hydrogeologic Evaluation of the (Ingersoll-Rand) Phillipsburg Landfill* was dated and submitted on January 5, 1983. The evaluation concluded that "the landfill does not present surface or groundwater contamination potential." Continuing groundwater investigations as reported in ENSR's April 2002 *NFA Request for Old Landfill (AOC-29)* and November 2002 *Groundwater Remedial Investigation Report* support that the Old Landfill is not contributing to groundwater impact at the site.

In the 1980s, due to regulatory pressure, IR placed a soil cap in the filled areas south of the facility (Old Landfill) and proceeded on the permitting of a new landfill, which is located on the western side of the "Old Landfill" east of the former Cameron Division area (discussed below).

The east, south and west boundaries of the landfill are clearly delineated. The east and south boundaries are the topographically-obvious sloping edge of the landfill and the west edge is defined by the newer, permitted landfill. Soil samples have also been collected south and east of the landfill to provide delineation. The north boundary is not obvious because the landfill contains mostly foundry sand, which has been used as fill throughout the site. As such, it may not be possible to differentiate between the edge of the landfill and other areas of site fill. Comparisons between 1902 and 2003 topographic maps indicate that up to 10 feet of fill is located below the southern-most manufacturing buildings (#10 and #24), which are north of the presumed extents of the old landfill.

Historical landfilling practices and materials are more also discussed in the waste disposal practices section of this report, contained in Appendix I.

L.3 New Landfill

In the mid-1980's Ingersoll-Rand desired to obtain a permit to create a landfill for disposal of debris anticipated to be generated from the razing of a number of buildings onsite planned for demolition. Ultimately, the attempt to get a permit to create a construction debris landfill was unsuccessful due to the lack of a construction debris landfill program in the State of New Jersey.

In the late 1980's, Ingersoll-Rand began the application process for the construction of a new class II sanitary landfill to serve as a disposal site for building demolition debris that was not desirable for reclamation and for spent foundry sand. A permit was obtained for this landfill, and the landfill was constructed in the early 1990's. All site buildings demolished since around 1991 have contributed construction debris to the new landfill. These buildings are believed to include Buildings #5, #55, #91, #105, #251, #252, #253, #254, #255, #257, #258, #259, #261, #262, #263, and #264.

Construction of the new class II sanitary landfill involved blasting of bedrock in order to construct the landfill cell to its designed depth. Rock debris from the rock blasting activity was deposited on the ground surface immediately south of the facility inverse ponds.

L.4 Other Filling Activities

Based on a review of historical aerial photographs as well as changes to the site configuration, it is anticipated that several areas of the site have been filled for apparent landscaping purpose. These areas include landscaping along the western side of the facility, in the foundry area, and north of Building #17A to the site boundary. Materials used to fill these areas appear to be native-looking; however, its origins are unclear.